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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/669,282

09/24/2003

Arthur Ballato

CECOM 5501

6561

7590

11/22/2004

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EXAMINER

SUMMONS, BARBARA

ART UNIT

PAPER NUMBER

2817

DATE MAILED: 11/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/669,282

Applicant(s)

BALLATO ET AL.

Examiner

Barbara Summons

Art Unit

2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2004 (pre-amendment).
- 2a) ☐ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-54 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

EX PARTE QUAYLE ACTION

1. This application is in condition for allowance except for the following formal matters:

In the Specification:

On page 4, on line 27, "4B" should be changed to -- 4C --.

On page 4, on line 29, "5B" should be changed to -- 5C --.

On page 5, on line 1, "6B" should be changed to -- 6C --.

In the Claims:

In claim 12, the definition of the resonator thickness dimension t_3 as "measured from the resonator to said bottom surface" (see lines 6-7 of the claim) is not clear since the resonator comprises the entire area of thickness t_3 . This does not rise to the level of a § 112 rejection since, in light of the specification and Fig. 4B being the embodiment to which this claim appears to be drawn, the dimension t_3 can clearly be understood as the distance from the top of mesa 44 to the bottom surface. Therefore, the Examiner suggests the following:

In claim 12, on line 7 thereof, "said resonator" should be changed to -- the top of said mesa -- (a mesa inherently has a top so reciting "the" top does not create an antecedent basis issue).

Similarly, in claim 33, on line 10 thereof, the Examiner suggests changing "said plurality of filters" to -- the tops of said plurality of mesas -- (see Fig. 6B).

Note that claims 1 and 22 do clearly define t_3 since they define a "top" and a "bottom resonator portion" (claim 1) or a "top" and a "bottom filter portion" (claim 22).

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In claim 44, on line 7 thereof, "top ring electrode said mesa" should be changed to either -- top ring electrode and said mesa -- or -- top ring electrode from said mesa --.

Similarly, in claim 44, on line 11 thereof, "bottom ring electrode said mesa" should be changed to either -- bottom ring electrode and said mesa -- or -- bottom ring electrode from said mesa --.

In claim 44, on line 17, "plate thickness dimension, t_2 needs to be defined. Therefore, the Examiner suggests that in claim 44, on line 17 thereof, after " t_2 " inserting -- measured from the top opening to the bottom opening -- (see Fig. 7B).

In claim 53, on line 1 thereof, it appears that "55" should correctly be -- 52 -- since there is no claim 55.

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

Allowable Subject Matter

2. Claims 1-54 are allowable over the prior art of record.
3. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not disclose or fairly suggest a resonator or resonator/filter device having each of the specifically recited combinations of features in the recited locations and with the recited dimensions and having the recited electrodes located so as to form the recited "electrode-free" resonator/filter that can operate with high Q at the recited 3GHz frequency.

The prior art being made of record is discussed below regarding features of the invention that are shown and that are lacking.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ballato U.S. 4,625,138 discloses a resonator having an electrode-free resonator area on mesa 35 (see Fig. 3 and col. 5, lines 1-3). A combination of Figs. 5A and 8B is similar to Applicants' Fig. 7B, but lacking at least the recited ring electrodes.

Sasaki U.S. 6,518,688 discloses a resonator (Figs. 1A and 1B) having a top and bottom well 6 that surrounds a mesa, but the electrodes 3 are formed on the mesa resonator area and not formed in the wells.

Hirama U.S. 6,111,341 discloses a resonator wherein the electrodes themselves have the shape of inverted mesas [see the abstract and Fig. 1(b)].

Godshall et al. U.S. 5,198,716 discloses a micromachined quartz resonator with an "energy trapping quartz mesa" (see the abstract and 35 in Fig. 2), but the electrodes are not located in a well surrounding the mesa, and instead electrodes 36 and 38 are located in wells 50 and 52 in the upper and lower support structure.

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Hirama et al. U.S. 4,870,313 discloses a resonator with a well 3 and 3' on both the top and bottom (see Fig. 7a) or just on the top (Figs. 7b and 7d), but the resonator area is provided with electrodes.

Mason U.S. 3,576,453 discloses resonators with mesas and wells on one side (Fig. 3) or both sides (Figs. 1, 4, 5 and 8) with electrodes provided in the wells, and the Fig. 8 embodiment has resonators r12-r14 that have electrode-less mesa areas, but the electrodes are not of the shape and arrangements recited.

Borner et al. U.S. 3,437,848 discloses resonators similar to the Fig. 8 embodiment of Mason discussed above (see Figs. 2a, 3 and 4a).

Schueler and Land U.S. 3,432,773 disclose a resonator with ring shaped electrodes arranged concentrically (see Figs. 1, 4 and 6a).

Mattiat U.S. 2,943,279 discloses a resonator with a well 7 formed on top and bottom surfaces surrounding a mesa 3 (see Figs. 3 and 4), wherein there is an electrode 8 in the well 7 on the side edges thereof, but there are also electrodes 1 and 1' on the top and bottom mesas.

Petridis et al. U.S. 4,661,201 discloses etching a piezoelectric material to form mesas and wells.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara Summons whose telephone number is (571) 272-1771. The examiner can normally be reached on M-Th, M-Fr.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bob Pascal can be reached on (571) 271-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

bs
November 16, 2004

A handwritten signature in cursive script that reads "Barbara Summons". The signature is written in black ink and is positioned above the printed name and title.

**BARBARA SUMMONS
PRIMARY EXAMINER**